

STUDY PURPOSE AND PROCESS

In mid-2021, the Georgia Department of Transportation (GDOT) initiated the Georgia Statewide Air Cargo Study. The study helps to determine how to position the state to meet current and future air cargo demand. Study objectives include:

- Providing an overview of the air cargo industry
- Identifying current air cargo activity
- Estimating potential increases in air cargo demand
- Evaluating the adequacy of facilities at airports served by integrated express carriers
- Determining if investment is needed to serve current or anticipated air cargo activity

Air cargo is an integral part of the operations for many different business types and it facilitates expedited deliveries for millions of customers. The study examines many facets of the air cargo industry in Georgia. Topics discussed in this summary include:

- Current scheduled air cargo carriers and routes flown
- Ad hoc or on demand air cargo activity
- Location and types of air cargo demand generators
- Volumes and values of commodities transported by air
- Proximity of demand generators to airports served by integrated express carriers
- Potential gaps in current accessibility to existing scheduled air cargo service and availability of existing infrastructure to fill gaps
- Anticipated growth in air cargo demand
- UAS/electric aircraft and their impact on air cargo trends
- Air cargo facility development and estimated costs
- Study findings and conclusions

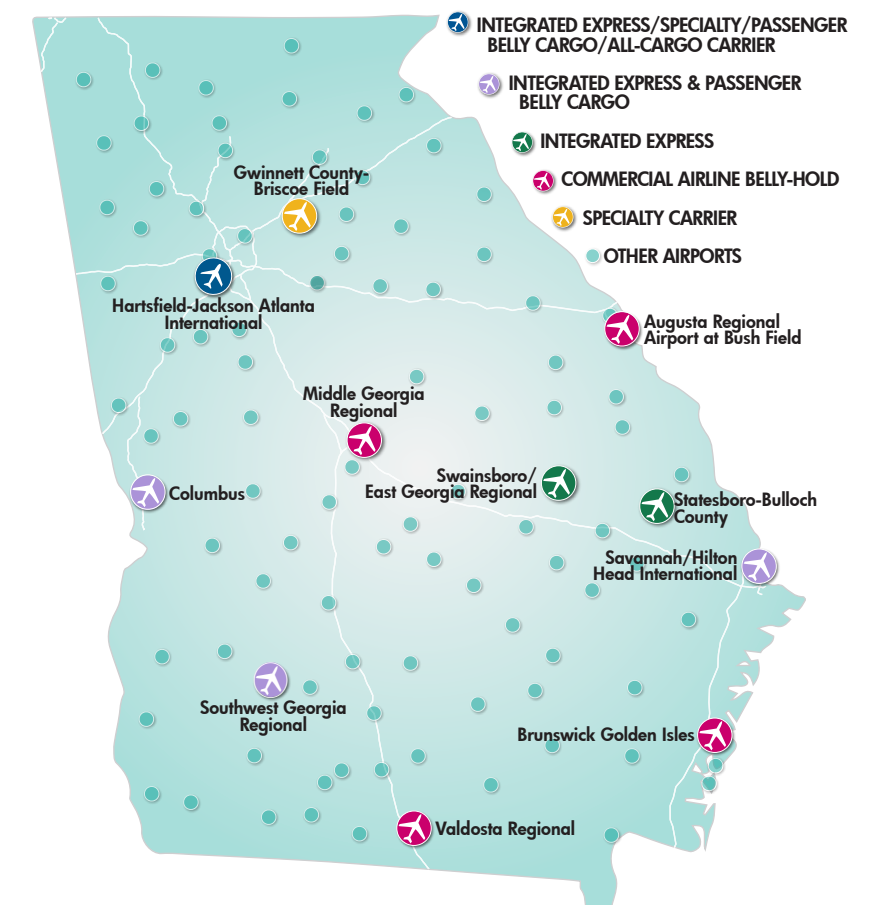
The full Technical Report is available at <http://www.dot.ga.gov/IS/AirportAid>.

STATEWIDE AIR CARGO STUDY EXECUTIVE SUMMARY



2022

TYPES OF CURRENT SCHEDULED AIR CARGO SERVICE





TYPES OF AIR CARGO CARRIERS OPERATING IN GEORGIA

Among the various types of air cargo providers, passenger airlines, integrated express carriers, and specialty carriers are the most frequent operators at Georgia airports. Within Georgia, combination carriers, all cargo carriers, and heavy lift freighters operate only at Hartsfield-Jackson Atlanta International Airport. Passenger airlines operate at the airports serving Albany, Atlanta, Augusta, Brunswick, Columbus, Macon, Savannah, and Valdosta. As a result, some portion of “belly-hold” space (also used for passenger luggage) is available to transport air cargo at the commercial airports.

A mix of different types of air cargo carriers operate in Georgia; these include:

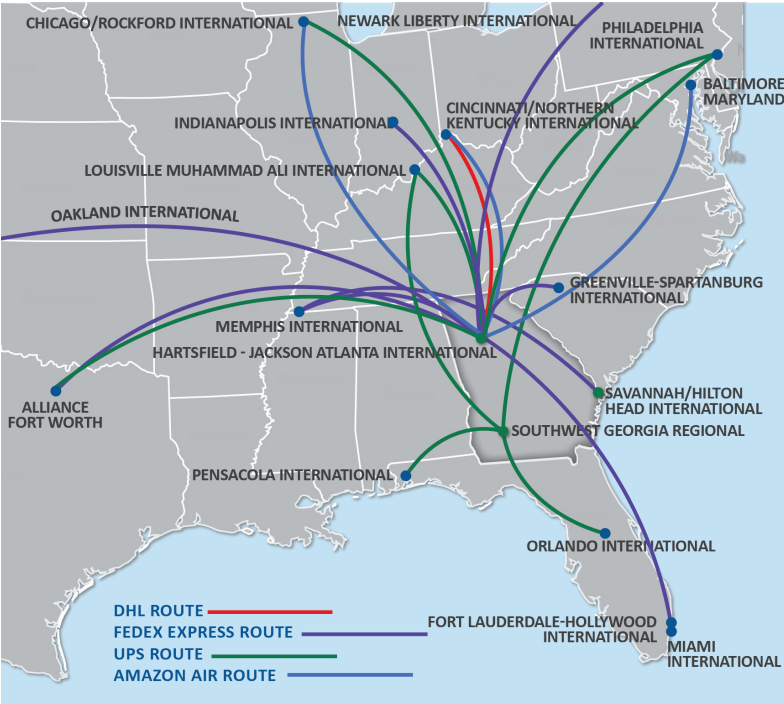
COMMERCIAL AIRLINES BELLY-HOLD	COMBINATION CARRIERS	INTEGRATED EXPRESS CARRIERS	SPECIALTY CARGO CARRIERS	AD HOC CARRIERS	ALL CARGO CARRIERS AND HEAVY LIFT FREIGHTERS
Carry an estimated 50% of all air cargo in their “belly-hold” compartments. All of the eight airports in Georgia served by one or more passenger airlines have the potential to serve belly-hold air cargo.	Serve both passengers and air cargo; most are foreign carriers. Alaska Airlines is the only domestic airline that falls into the combination carrier category.	Offer door to door service and include operators such as UPS, FedEx Express, and DHL. Currently, there are six airports in Georgia that have air cargo service provided by an integrated express operator.	Include a variety of niche cargo carriers. Examples of specialty carriers operating in Georgia include Amazon Air, Quest Diagnostics, and Phoenix Air that operates in Cartersville.	Provide “on demand” service to businesses and industries throughout Georgia. Service provided by these air cargo operators is not scheduled. Ad hoc carriers operate aircraft ranging from small general aviation planes to larger jets of varying size.	Operate between large markets serving primarily international routes. Air cargo carriers in this category operate only at Hartsfield-Jackson Atlanta International Airport. Carriers in this category are not expected to operate at other study airports.

SCHEDULED AIR CARGO ROUTES IN GEORGIA

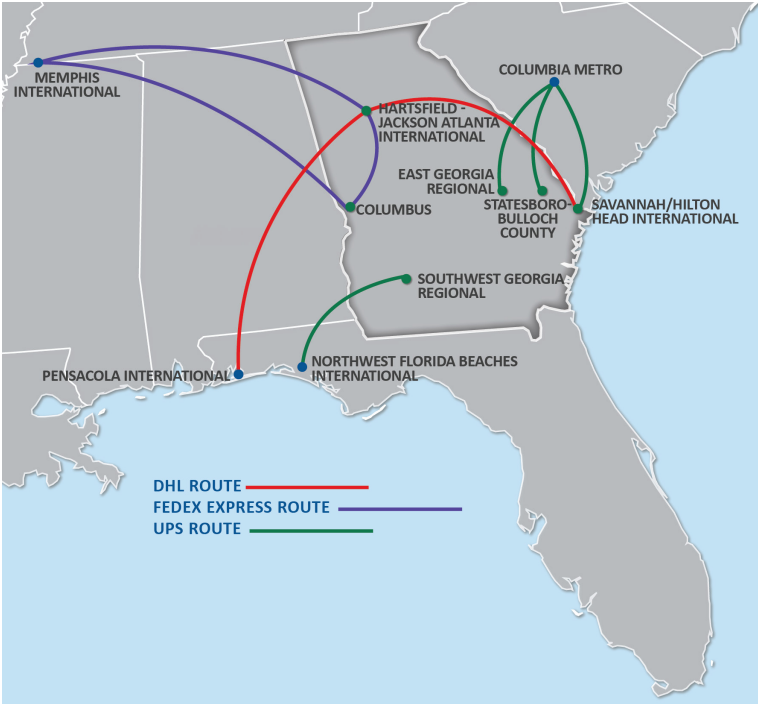
- Six airports in Georgia have regularly scheduled air cargo service provided by an integrated express carrier
- The airports serving Atlanta, Albany, Columbus, Savannah, Statesboro, and Swainsboro currently have integrated express carrier service
- Integrated express carriers operating at Georgia airports include UPS, FedEx Express, and DHL
- Amazon Air operates in Georgia but currently only at Hartsfield-Jackson Atlanta International



SCHEDULED INTEGRATED EXPRESS CARRIER JET AIRCRAFT FLIGHTS



SCHEDULED INTEGRATED EXPRESS CARRIER TURBOPROP AIRCRAFT FLIGHTS

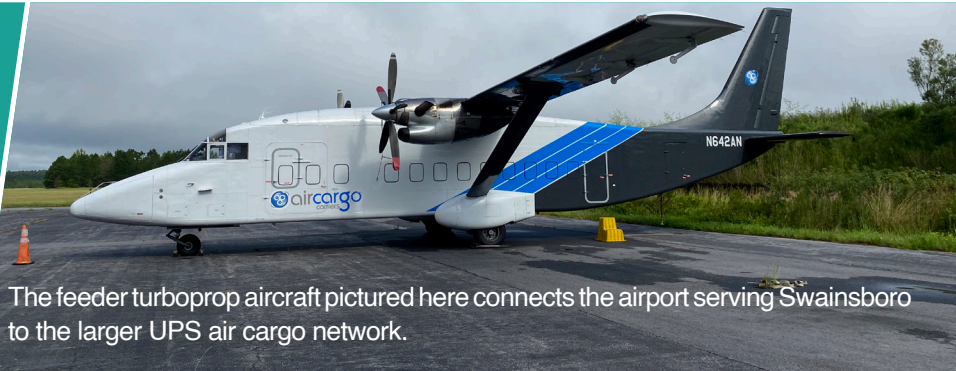
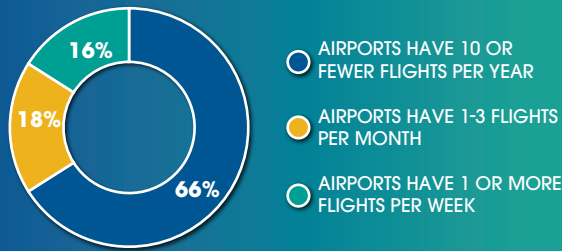


These maps show airports in Georgia that have regularly scheduled air cargo service on either jet or turboprop aircraft. Georgia airports with scheduled air cargo service, the service provider, and the destinations served are also shown here. These maps do not reflect all cargo flights accommodated by Hartsfield-Jackson Atlanta International Airport.

AD HOC OR ON-DEMAND AIR CARGO ACTIVITY

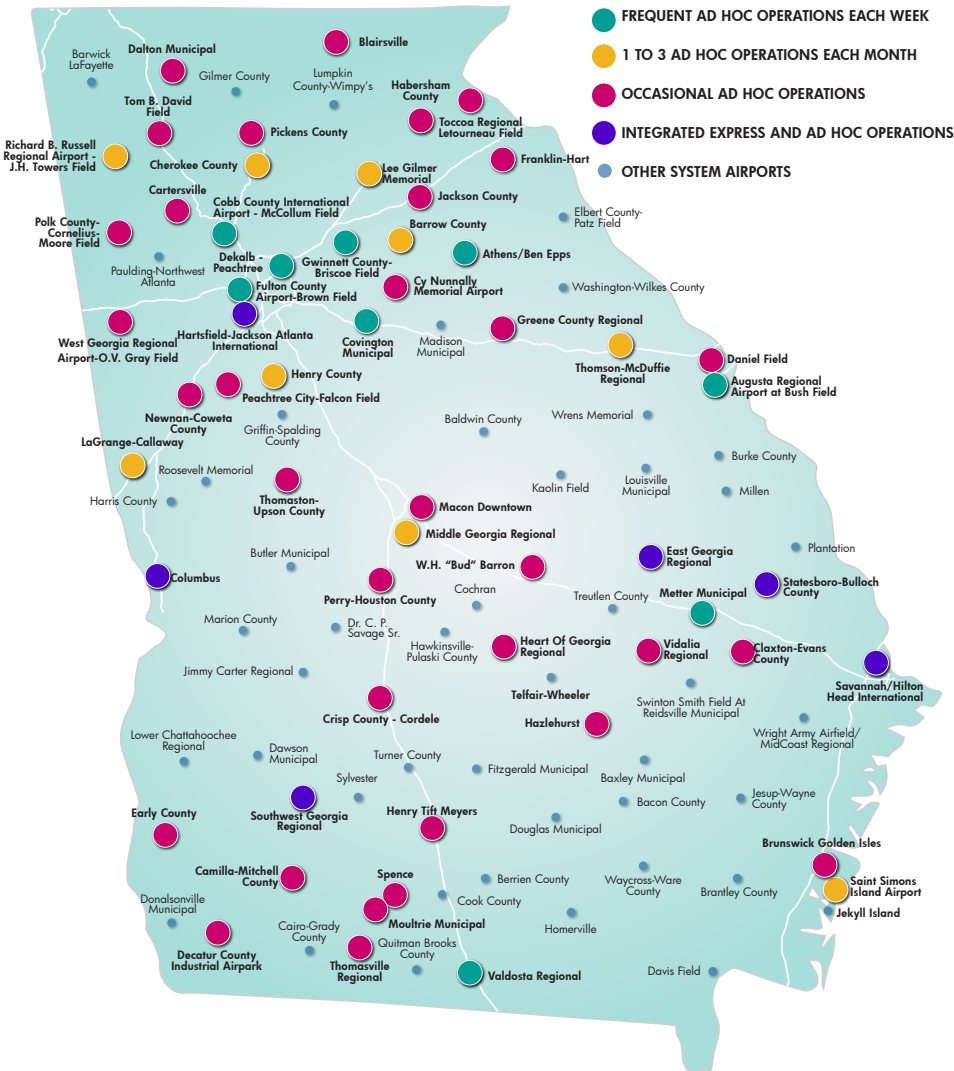
In addition to airports with scheduled air cargo flights, there are many other airports in Georgia that accommodate the movement of air cargo. Data from the Federal Aviation Administration’s (FAA) National Offload Program (NOP) reveals that 58 of the 103 airports in the Georgia system accommodate air cargo flights. Air cargo activity at these airports falls into the on demand or ad hoc category. The varying levels of ad hoc activity at airports in Georgia are reflected on the map below.

Review of the FAA’s NOP data shows that for the 58 airports that have on demand or ad hoc air cargo flights:



The feeder turboprop aircraft pictured here connects the airport serving Swainsboro to the larger UPS air cargo network.

GEORGIA’S CURRENT AD HOC AIR CARGO ACTIVITY



AIRPORTS WITH SCHEDULED AIR CARGO SERVICE

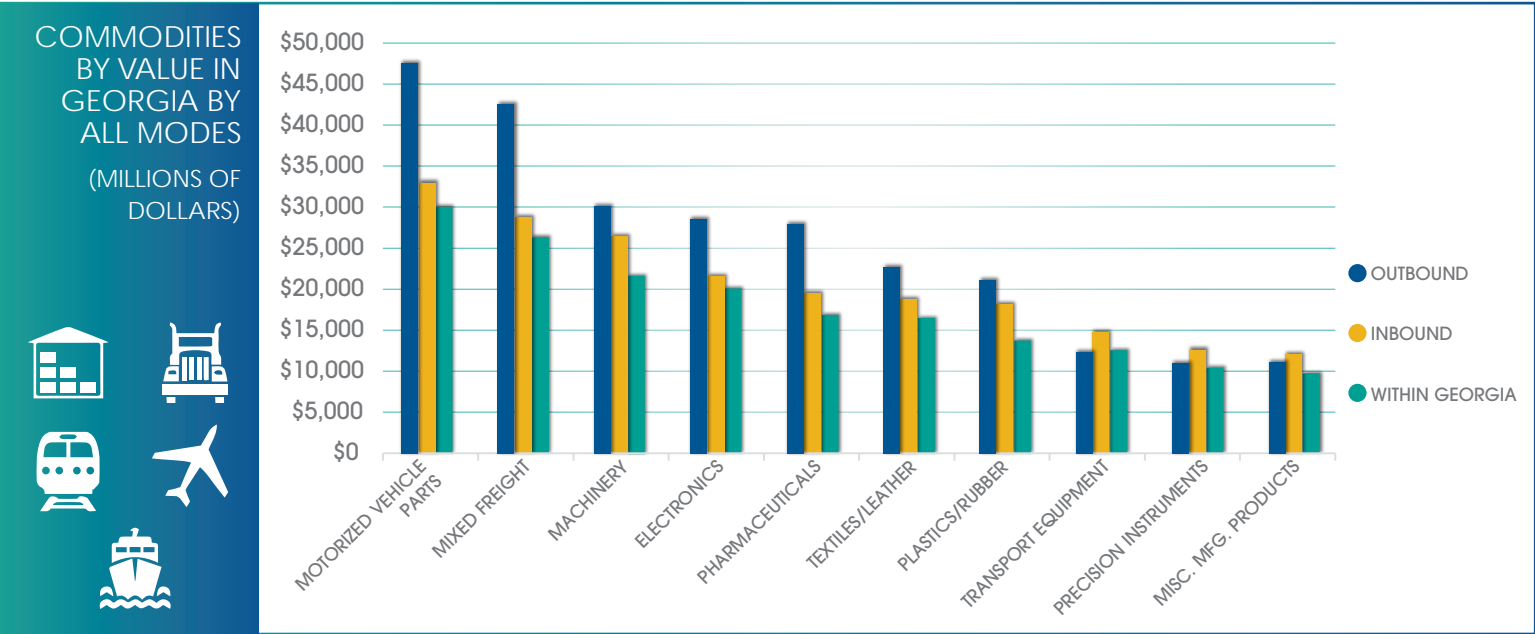
This map shows the relative frequency of ad hoc flights. In addition, airports with scheduled air cargo flights are also depicted. Airports in Georgia that have scheduled air cargo service include:

- ✈ Southwest Georgia Regional (Albany)
- ✈ Hartsfield-Jackson Atlanta International
- ✈ East Georgia Regional (Swainsboro)
- ✈ Columbus
- ✈ Statesboro-Bulloch County
- ✈ Savannah/Hilton Head International

Gwinnett County-Briscoe Field has a specialty air cargo carrier that operates scheduled flights on a daily basis. Quest Diagnostics, based at the airport, uses its own fleet of aircraft to fly medical samples. These specialty operations are different than those of the integrated express carriers as this service is not for hire.

GEORGIA’S AIR CARGO COMMODITIES

Relative to the other modes of transportation, air transportation is the most expensive mode. The timeliness of air transport, however, cannot be matched by other modes. Transporting cargo by air is typically reserved for high value/low weight materials, perishable goods, and time sensitive items. Information shown below reflects the value and type of goods moved to and from Georgia, as well as within the state, transported by all modes.



GEORGIA DOMESTIC AND INTERNATIONAL COMMODITY FLOWS

Domestically, goods with a total annual value of almost \$3 billion are transported by air to and from Georgia. Internationally, the value of goods transported to and from Georgia by air is almost \$27 billion. Top commodities transported to Georgia by air include electronics, motor vehicle parts, pharmaceuticals, machinery, and transport equipment.

Information presented on this page is from the U.S. Bureau of Transportation Statistics, 2017.

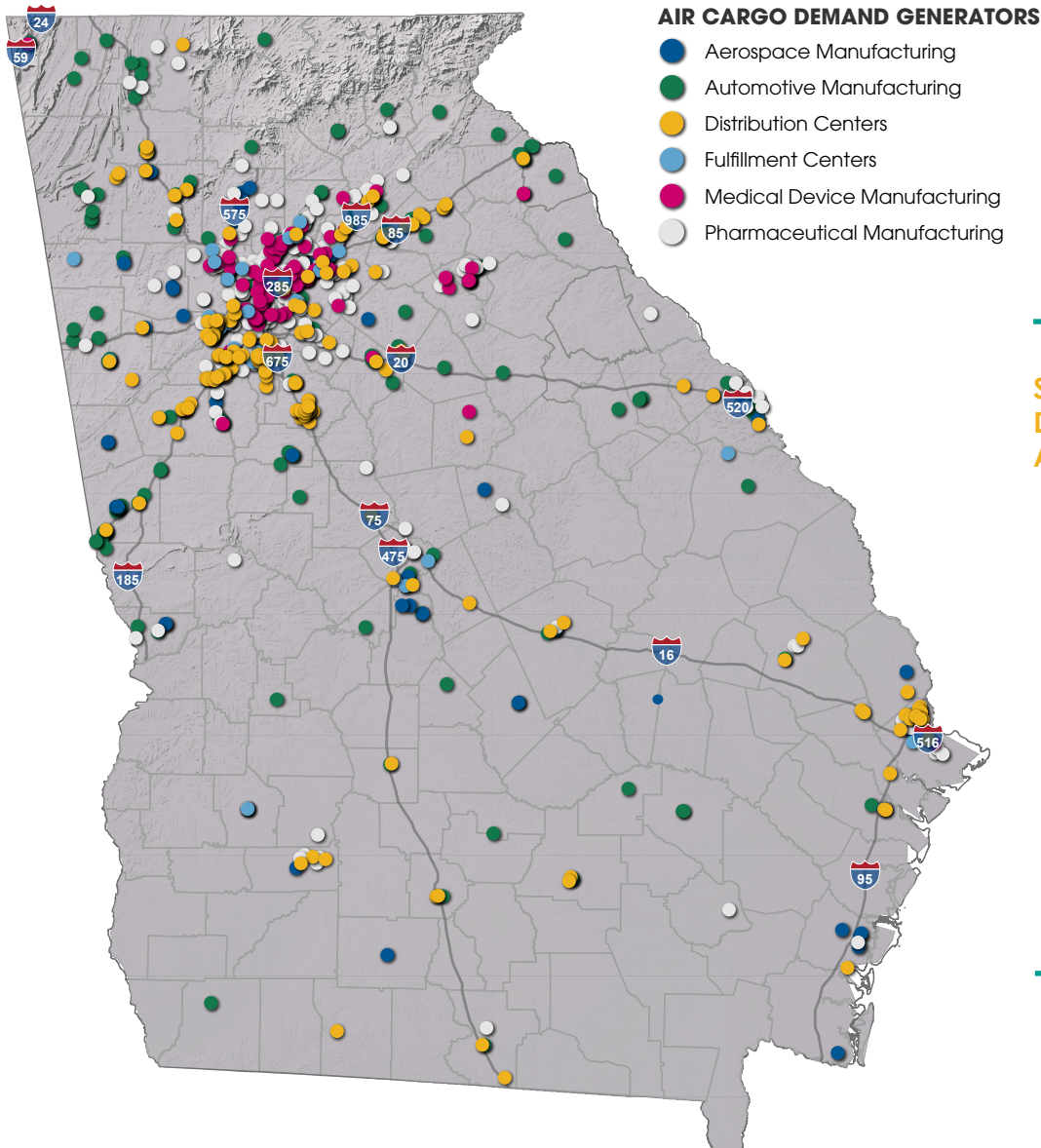
DOMESTIC INBOUND		DOMESTIC OUTBOUND		INTERNATIONAL INBOUND		INTERNATIONAL OUTBOUND	
TOP 10 COMMODITIES	VALUE (MILLIONS)	TOP 10 COMMODITIES	VALUE (MILLIONS)	TOP 10 COMMODITIES	VALUE (MILLIONS)	TOP 10 COMMODITIES	VALUE (MILLIONS)
Electronics	\$892	Pharmaceuticals	\$662	Electronics	\$4,583	Machinery	\$4,003
Pharmaceuticals	\$181	Motor Vehicle Parts	\$348	Motor Vehicle Parts	\$3,869	Transport Equipment	\$2,350
Motor Vehicle Parts	\$157	Electronics	\$256	Machinery	\$1,566	Electronics	\$1,219
Articles-Base Metal	\$90	Machinery	\$137	Precision Instruments	\$1,385	Precision Instruments	\$1,044
Machinery	\$61	Textiles/Leather	\$21	Transport Equipment	\$434	Articles-Base Metal	\$699
Textiles/Leather	\$36	Chemical Products	\$8	Textiles/Leather	\$408	Nonmetal Mineral Products	\$636
Plastics/Rubber	\$19	Live Animals/Fish	\$8	Misc. Manufactured Products	\$385	Base Metals	\$460
Basic Chemicals	\$10	Plastics/Rubber	\$5	Plastics/Rubber	\$381	Motor Vehicle Parts	\$395
Meat/Seafood	\$10	Printed Products	\$3	Pharmaceuticals	\$318	Chemical Products	\$238
Base Metals	\$9	Basic Chemicals	\$2	Articles-Base Metal	\$318	Pharmaceuticals	\$228
Other Commodities	\$24	Other Commodities	\$1	Other Commodities	\$1,204	Other Commodities	\$796
Total	\$1,488	Total	\$1,452	Total	\$14,851	Total	\$12,069

CARGO GENERATING ACTIVITIES

Various sources were investigated to determine the location of activities and industries within the state that have the propensity to generate or rely on air cargo. Locations and relative sizes for each air cargo demand generator were researched and mapped using GIS. Demand generators investigated in this analysis are shown here.

TYPE OF DEMAND GENERATOR	NUMBER OF LOCATIONS
DISTRIBUTION CENTERS	191
FULFILLMENT CENTERS	41
AEROSPACE MANUFACTURING	81
AUTOMOTIVE MANUFACTURING	174
MEDICAL DEVICE MANUFACTURING	97
PHARMACEUTICAL MANUFACTURING	294

LOCATION OF DEMAND GENERATORS



SUMMARY OF AIR CARGO DEMAND GENERATOR ANALYSIS

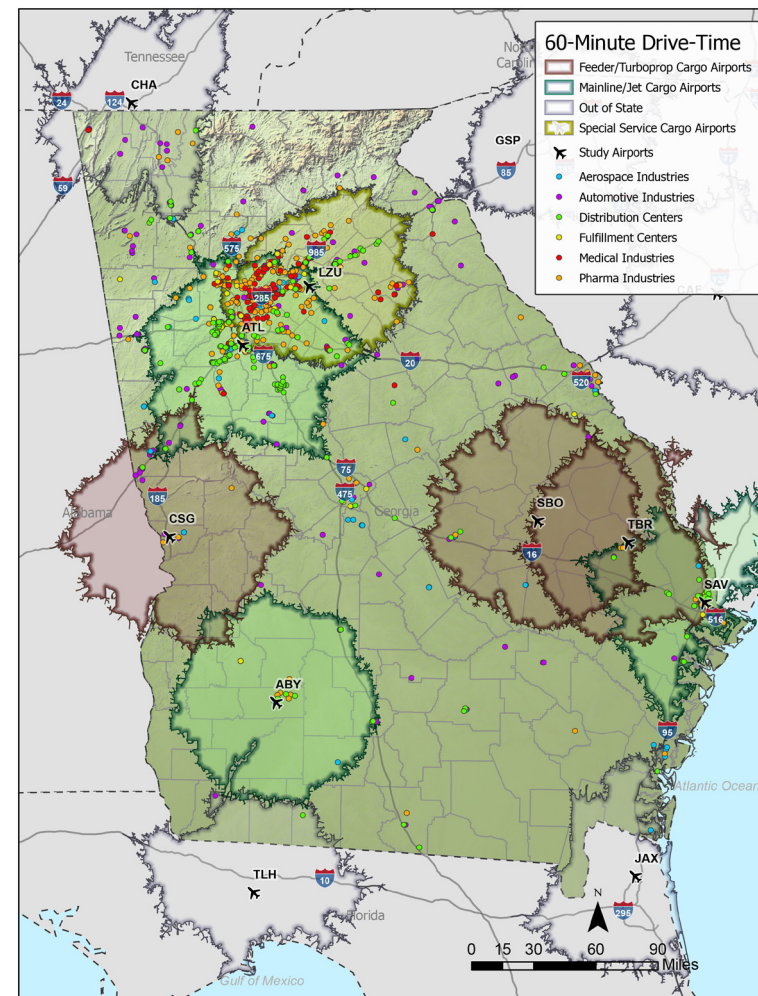
- A total of 878 demand generators were identified
- The Technical Report provides the relative size of the air cargo demand generators, the location of generators relative to current integrated express carrier service, and data sources used to identify generators
- Demand generators are highly concentrated in the Atlanta metro area
- Demand generator locations generally mirror locations for major highways and urban areas



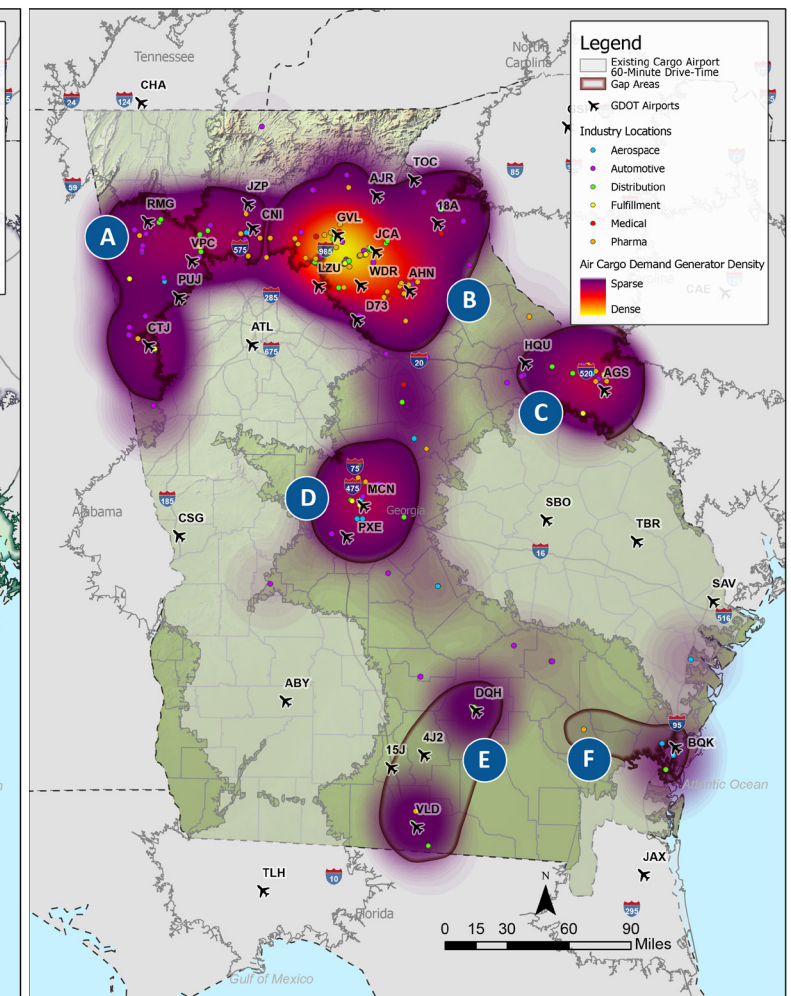
CURRENT ACCESSIBILITY AND GAPS FOR AIR CARGO DEMAND GENERATORS

For integrated express carrier service, speed and distance determine their pick-up and drop-off times. For the study analysis, 60-minute drive-times are used to approximate areas with access to scheduled air cargo service provided by an integrated express carrier. The map on the bottom left shows these drive-times. An estimated 86 percent of the identified demand generators are within the 60-minute drive-times. There are, however, concentrations of demand generators that fall beyond the identified drive-time accessibility. These areas are identified as “gap areas” in the state study. A total of six gap areas (areas A-F) were identified; the heat map reflects the relative concentration of the air cargo demand generators in each of the gap areas. As the “heat map” on the bottom right reflects, the highest concentrations of identified air cargo demand generators that are beyond a 60-minute drive-time from an airport currently served by an integrated express carrier are located northeast of the the Atlanta Metro Area.

60-MINUTE DRIVE-TIME TO SCHEDULED AIR CARGO SERVICE



GAPS IN ACCESSIBILITY TO INTEGRATED EXPRESS CARRIER SERVICE

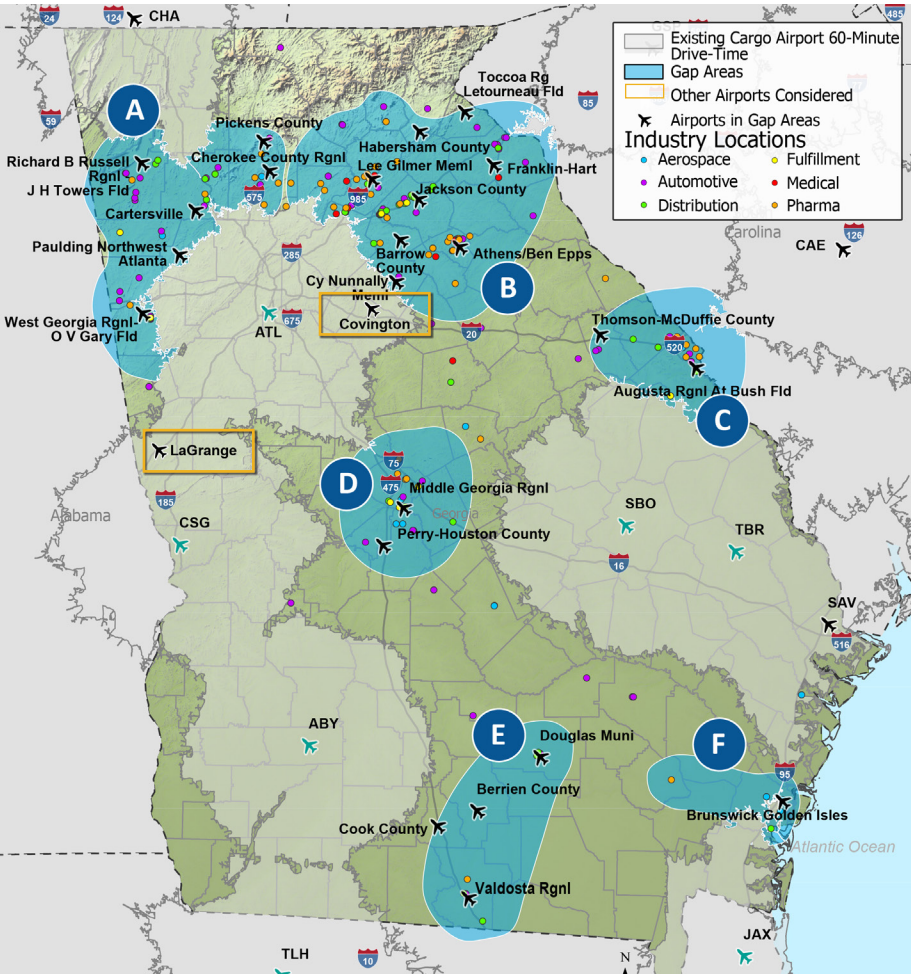


GAP AREA ANALYSIS

Study analysis showed that gap areas north of the Atlanta metro area have the highest concentration of air cargo demand generators. The next step in the analysis was to review airports in each of the gap areas with a minimum runway length of 5,000 feet to assess 21 different attributes for serving an air cargo operator. The attributes matrix considered factors such as proximity to demand generators, airfield facilities, approach capabilities, expansion potential, and ground accessibility.

Ultimately, airports were ranked as high, medium, or low as it relates to serving an integrated express cargo carrier. Initially, 23 airports in the gap areas were identified for inclusion in the airport attributes matrix. Based on the potential to attract additional fulfillment centers and warehousing activity, airports serving Covington and LaGrange were added to the attributes matrix.

In addition to the identified gap areas, the Atlanta metro area which lies within the 60-minute drive time of integrated express carrier service at ATL may also be a potential candidate for air cargo expansion. Ground access constraints in the metro area, along with the high concentration of air cargo demand generators in this area both indicate that additional service points may be necessary to maintain reasonable drop-off and pick-up times for integrated express carrier customers.



RESULTS OF AIR CARGO ATTRIBUTES SCORING MATRIX			
GAP AREA	CITY	AIRPORT NAME	SCORING SUMMARY
A	Atlanta	Paulding Northwest Atlanta	Medium
A	Canton	Cherokee County Regional	Medium
A	Carrollton	West Georgia Regional - O V Gray Field	Medium
A	Cartersville	Cartersville	Low
A	Jasper	Pickens County	Low
A	Rome	Richard B Russell Regional - J H Towers Field	Medium
B	Athens	Athens/Ben Epps	Medium
B	Canon	Franklin-Hart	Medium
B	Cornelia	Habersham County	Low
B	Gainesville	Lee Gilmer Memorial	Medium
B	Jefferson	Jackson County	High
B	Monroe	Cy Nunnally Memorial	Low
B	Toccoa	Toccoa Regional Letourneau Field	Low
B	Winder	Barrow County	Medium
C	Augusta	Augusta Regional at Bush Field	High
C	Thomson	Thomson-McDuffie County	Medium
D	Macon	Middle Georgia Regional	High
D	Perry	Perry-Houston County	Medium
E	Adel	Cook County	Medium
E	Douglas	Douglas Muni	Medium
E	Nashville	Berrien County	Low
E	Valdosta	Valdosta Regional	High
F	Brunswick	Brunswick Golden Isles	Medium
Non-Gap	Covington	Covington Municipal	Medium
Non-Gap	LaGrange	LaGrange Callaway	Medium

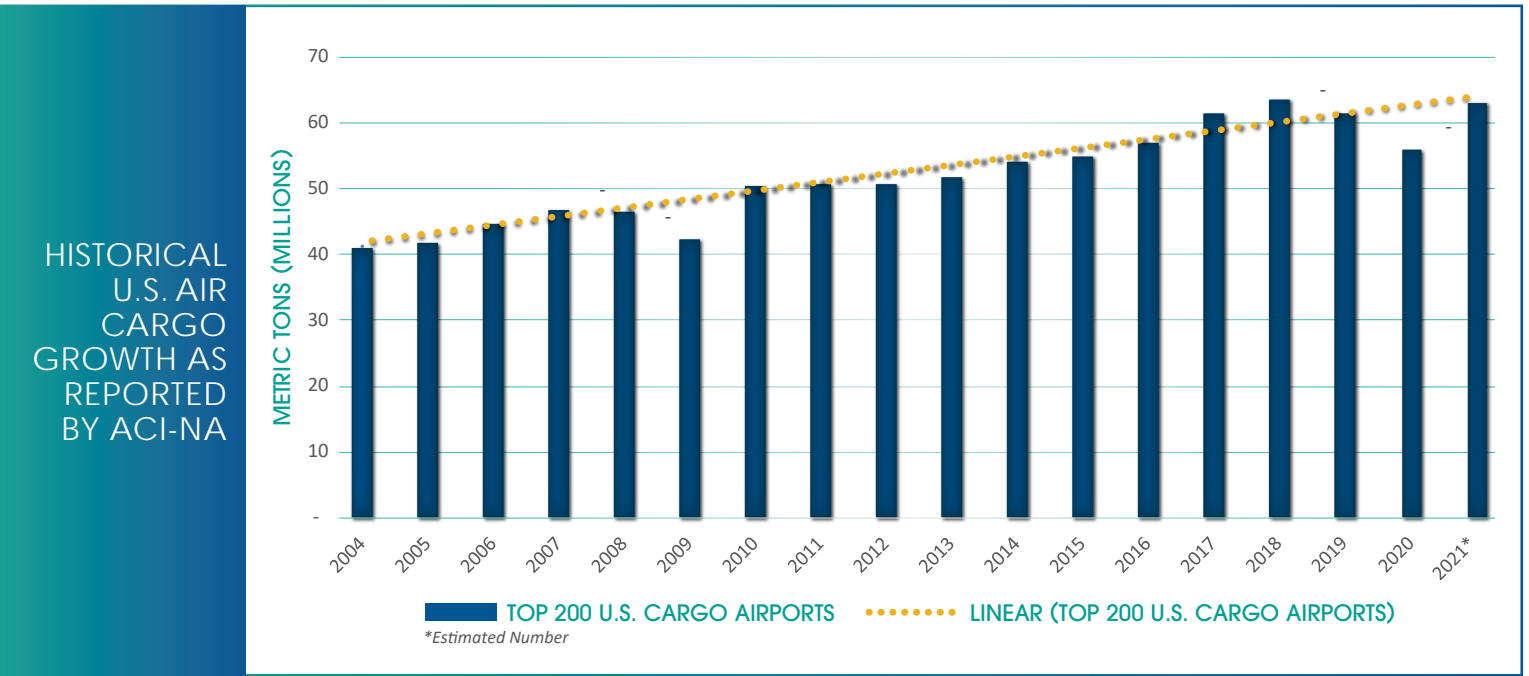
CONCLUSIONS FROM GAP AREA ANALYSIS

- All communities in Georgia are currently served by one of the airports with existing scheduled integrated express carrier service.
- Based on their location, some communities have more convenient access to existing air cargo service.
- There are airports in identified gap areas that have existing infrastructure that make them options for air cargo carriers seeking expansion opportunities in Georgia.

FUTURE AIR CARGO DEMAND

Between 2011 and 2020, air cargo activity at the 200 busiest cargo airports in the U.S. increased at an average annual rate of 2.6 percent. Air cargo volumes fell in 2020 as a result of the COVID pandemic. The decline was not tied to a decrease in demand, but rather a decline in capacity. As commercial travel decreased in 2020, airlines reduced flights and in so doing cut belly-hold capacity. Lack of belly-hold capacity drove air cargo volumes down in 2020.

The pandemic also resulted in a shift in the air cargo industry with notable increases in e-commerce. Online shopping by consumers and businesses fueled growth in this segment of the air cargo market. Based on data from the International Air Transport Association, in 2019, e-commerce accounted for 18 percent of all air cargo revenues; in 2022, it is expected to account for 22 percent of all revenues.



Historic average annual rates of growth in air cargo activity at airports in Georgia have been similar to those experienced nationally. This study used 2019 as the base year for forecasting future air cargo demand; 2019 was selected so that projections would not be artificially depressed by 2020 COVID-related conditions. The study's forecasting effort considered actual historic growth in air cargo demand in Georgia and also information from airport master plans, the FAA's National Aerospace Forecast, and Boeing's World Air Cargo Forecast. As shown, over the next 20 years, airports in Georgia, currently served by an integrated express air cargo carrier, are expected to see air cargo tonnage double.

AIR CARGO TONNAGE FORECAST FOR STUDY AIRPORTS

FAA ID	ASSOCIATED CITY	AIRPORT NAME	AAGR	2019	2025	2030	2040
AIR CARGO TONNAGE IN ANNUAL METRIC TONS							
ABY	Albany	Southwest Georgia Regional	2.8%	24,950	29,450	33,810	44,560
CSG	Columbus	Columbus	2.8%	430	510	580	770
SAV	Savannah	Savannah/Hilton Head International	2.8%	8,930	9,900	11,370	14,980
TBR	Statesboro	Statesboro-Bulloch County Airport	2.8%	350	400	460	630
SBO	Swainsboro	East Georgia Regional Airport	2.8%	690	810	930	1,230
TOTAL				34,810	41,080	47,170	62,170

EMERGING TRENDS FOR THE AIR CARGO INDUSTRY

As of the first quarter of 2022, FedEx Express, UPS, and DHL all have fleet expansion plans in part driven by growth in e-commerce.

UPS



UPS currently operates at all Georgia airports with scheduled air cargo operations. UPS, a Georgia-based air cargo company, has plans to purchase 150 electric Vertical Takeoff and Landing (eVTOL) aircraft from Beta Technologies. Electric aircraft acquired by UPS will serve as feeder air cargo aircraft, expanding the UPS route network. Beta Technologies plans to install electric charging stations at three airports in Georgia. Electric aircraft will require charging stations but otherwise will have facility needs similar to conventional feeder aircraft. UPS is also purchasing 19 new B-767 freighter air cargo aircraft.

FEDEX EXPRESS



FedEx Express is expanding its fleet of feeder air cargo aircraft; they have ordered 50 Cessna SkyCourier 408 aircraft and have options for 50 more of these planes. Beginning in 2017, FedEx Express also began expansion of its feeder air cargo aircraft fleet with the purchase of 30 ATR 72-600F aircraft; with subsequent purchases, FedEx Express expects to have approximately 50 of these feeder aircraft in service.

FedEx Express also has plans to add to its fleet with an autonomous hybrid-electric vertical take-off and landing (eVTOL) aircraft the Elroy Air Chaparral. FedEx Express will conduct a first-of-its-kind test of Elroy's cargo-carrying autonomous eVTOL in early 2023. The plan is for this eVTOL to ferry goods between FedEx sorting locations. Elroy is planning for its eVTOL to carry 300–500 pounds of cargo for up to 300 miles. The vertical takeoff capabilities for this plane will not require a runway. FedEx Express also has plans to acquire 50 Boeing 767-300F aircraft.

DHL



DHL is expanding its air cargo fleet. DHL Express and Eviation, a Seattle-area based global manufacturer of all-electric aircraft, announced that DHL is the first to order 12 fully electric Alice eCargo planes from Eviation. In addition to acquiring these electric feeder aircraft, DHL is also purchasing 19 new B-767 all cargo freighter aircraft.

ALPINE AIR EXPRESS



Alpine Air Express provides air cargo services to smaller communities. They currently support customers such as FedEx Express, UPS, and the U.S. Postal Service. Alpine Air Express recently acquired Suburban Air Freight to support growing demand for e-commerce services. Alpine Air Express is one of the largest regional air cargo carriers in the U.S., and its new acquisition of 25 Beechcraft 1900D aircraft will enable this carrier to begin flying for DHL Express to support that air cargo operator's domestic expansion efforts. Alpine Air Express operates a fleet of 85 different feeder aircraft. This feeder currently operates at both Savannah and Atlanta.

FINDINGS FROM EMERGING TRENDS

- Integrated express carriers will continue to expand their fleets with larger freighter jets.
- Smaller feeder aircraft will also be used to expand air cargo route networks; increasing e-commerce demand is fueling growth for feeder service.
- Both traditional and new electric aircraft will support air cargo feeder service.
- Most feeder aircraft currently in service, as well as electric aircraft that will come online, can operate on a 5,000-foot runway.
- Changes in aircraft technology will have an impact on the air cargo industry; carriers are committed to reducing their carbon footprints and electric aircraft will help them to achieve this objective.
- As discussed in the next section, unmanned aerial systems (UAS) and drones will also expand air cargo delivery options.

ROLE OF UNMANNED AERIAL SYSTEMS (UAS)/DRONES IN CARGO DELIVERY

When both the military and civilian markets are considered, by 2026, the value of the UAS market is expected to be **\$58.6 billion**. There are currently four categories being tested for UAS cargo delivery, these include:

- Parcel delivery during the first or last mile
- Intralogistics and automation within controlled environments in factories or warehouses
- Transport of medical supplies to inaccessible areas
- Transportation of retail purchases in both urban and rural areas

Each category has the potential to change conventional ways of carrying out delivery tasks. The logistics industry is blazing the trail for use of this technology, followed by healthcare and then the retail industry. Continual research and development, along with practical implementation of autonomous UAS and supporting technologies, will support air cargo deliveries.

To support growth in this sector, the FAA initiated the Integration Pilot Program (IPP) and UAS BEYOND. The programs focus on testing and evaluating the integration of drone operations into the National Airspace System (NAS) and on addressing challenges such as Beyond Visual Line of Sight (BVLOS) operations. The FAA requires a Part 135 certification for drone package deliveries, along with appropriate airspace authorizations. The FAA issued two rules in December 2020 for Remote ID and Operation of Small Unmanned Aircraft Systems Over People. Remote ID is key to unmanned UAS management and safety. The rule requires a “license plate” for most drones operating in the NAS, allowing for easy tracking, planning, and responding. North America was the largest region in the drone package delivery market in 2021.

Companies testing UAS deliveries include Federal Express, Walgreens, Kroger, the United Parcel Service (UPS), Coke, Google, Atrium Healthcare, Verizon, CVS, Walmart, and Amazon. Unmanned air cargo delivery has the potential to serve traditional routes along with new and emerging advanced air mobility concepts. At this time, the specific impacts that UAS will have on air cargo activity in Georgia are unknown. UAS that will operate at Georgia airports to support air cargo are expected to have minimal facility needs.

According to BusinessWire, a Berkshire Hathaway company, when both the military and civilian markets are considered, by 2026, the value of the UAS market is projected to be \$58.6 billion.



ANTICIPATED NEEDS FOR AIRPORTS SERVING AIR CARGO FEEDER CARRIERS

Airports serving Columbus, Statesboro, and Swainsboro are currently served by air cargo feeder operators that fly turboprop aircraft. Operational procedures, existing facilities, and future air cargo demand all served as inputs for establishing facility needs at these airports. Feeder carriers seldom have the need for dedicated air cargo buildings or truck docks, facilities most often associated with integrated express carriers flying jet aircraft. When feeder air cargo carriers that support FedEx Express and UPS land at an airport, trucks and vans typically drive directly onto the aircraft apron to either load or unload air cargo; cargo is then taken to off-airport locations for sorting and distribution.

Air cargo feeder aircraft that currently operate in Georgia include the Shorts 360 and the Cessna Caravan; based on manufacturer specifications, both aircraft can operate on runways lengths less than 5,000 feet. Research included in the statewide study shows that FedEx Express, UPS, and DHL all have plans to purchase additional feeder type aircraft to expand their route networks. These new feeder aircraft also have runway length requirements under 5,000 feet.

Due to the nature of their existing air cargo operations, the statewide air cargo study determined that, at this time, dedicated air cargo facilities at the airports serving Columbus, Statesboro, or Swainsboro are not required. Current air cargo facilities at these airports are also adequate to serve projected air cargo demand, assuming the type of aircraft and frequency of operation remain the same. Airports in Georgia that support air cargo feeder operations, however, need to monitor the condition of their existing facilities, especially the condition of aircraft aprons which are critical to the operation of these carriers. These airports should also monitor the development of emerging electric aircraft technology to determine the need for electric charging stations.

ANTICIPATED NEEDS FOR AIRPORTS SERVING JET AIR CARGO CARRIERS

Both Southwest Georgia Regional (Albany) and Savannah-Hilton Head International airports are served by integrated express carriers flying jet aircraft. Both airports have experienced growth in air cargo activity; and this growth, according to study forecasts, is expected to continue. Study analysis indicates expansion of current air cargo and the development of new facilities is needed. In fact, Savannah is already in the process of expanding its air cargo facilities.





DEVELOPMENT OF AIR CARGO FACILITIES AT SAVANNAH/HILTON HEAD INTERNATIONAL AIRPORT

- Major air cargo carriers include FedEx Express, DHL, UPS, Delta Air Lines, and Gulfstream Aerospace.
- The airport is implementing plans to address current air cargo facility deficiencies and to accommodate future demand.
- Development plans call for a new air cargo building (220,000 square feet) and a new apron for parking air cargo aircraft (176,000 square feet).
- New access taxiways are identified that will provide improved access and efficiency for aircraft using the new air cargo facilities.
- The new air cargo area has the flexibility to be further expanded, once the nearer term projects are completed.
- Follow-on studies are needed to determine how best to address ground access constraints that impede the air cargo operators.
- Studies to investigate two at grade CSX railroad crossings and congestion at Exit 104 on I-95 should be undertaken.

DEVELOPMENT OF AIR CARGO FACILITIES AT SOUTHWEST GEORGIA REGIONAL AIRPORT (ALBANY)

- UPS has a major operation at the airport to serve areas in Georgia, Alabama, and Florida.
- Three large air cargo jets and one feeder plane now use the airport for air cargo transport.
- Sufficient apron space is not currently available to facilitate efficient aircraft maneuvering.
- A project to expand the air cargo ramp (50,000 square feet) is needed now.
- Future air cargo growth could result in six larger air cargo jets operating at the airport, requiring additional parking apron (350,000 square feet).
- Larger air cargo jets flying at full capacity on longer stage lengths require a longer runway, an extension of approximately 1,500 feet.
- Future facilities to accommodate air cargo demand also include a new/expanded air cargo processing building and additional vehicle/truck parking.
- A pending airport master plan will verify expansion needs, phasing, and costs.

AIR CARGO AT HARTSFIELD-JACKSON ATLANTA INTERNATIONAL AIRPORT (ATL)

ATL is the world's busiest airport as measured by passenger traffic. Many passenger airlines flying both domestic and international routes also carry cargo in their belly-hold compartments. Like commercial passenger volumes, the cargo tonnage transported by ATL changes in response to domestic and global economies. Based on information from Airports Council International (ACI), in 2020 ATL ranked 13th domestically for the annual air cargo tonnage transported and ranked 45th internationally.

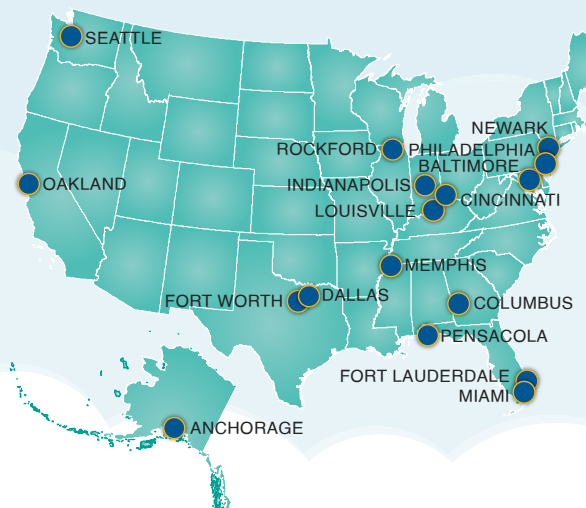
Based on City of Atlanta projections, total air cargo tonnage at ATL is expected to exceed 1.4 million tons by 2031. An estimated 60 percent of all air cargo tonnage moved through ATL will be transported by all cargo carriers, and the remaining 40 percent will be carried in the belly-hold of domestic and international commercial passenger flights.

There are 18 different all cargo carriers that transport air cargo to and from ATL. Flight maps shown below depict international and domestic air cargo points of service to and from ATL. International locations with direct service are the map on the right; the map on the left depicts domestic locations linked to ATL primarily by carriers such as Amazon Air, DHL, FedEx Express, and UPS.

ATL AIR CARGO FORECASTS

	2011	2031	AAGR
Total Annual Cargo Tonnage	663,100	1,414,000	3.9%
Dedicated Air Cargo Tonnage Only (Estimated)	397,900	848,400	3.9%
Air Cargo Operations	11,900	19,200	2.4%

ATL Domestic Air Cargo Flights



ATL International Air Cargo Flights



COSTS TO IMPLEMENT SYSTEM IMPROVEMENTS

Planning level cost estimates indicate investment needed to improve facilities at Georgia airports served by feeder carriers who serve larger integrated express operators is limited. The nature of feeder operations at airports serving Columbus, Statesboro, and Swainsboro, indicates that, at this time, ramp improvements totaling **\$2.6 million** are needed to support air cargo operators.

Significant air cargo enhancement projects identified for the airports serving both Albany and Savannah will require greater investment. Total investment needed to address expansion at Albany is estimated at **\$30.3 million**, while total investment needed to address air cargo expansion at Savannah is estimated at **\$70.8 million**. In total, air cargo enhancement projects identified in the GDOT study total **\$103.7 million**. This estimate does not include air cargo development costs at Hartsfield-Jackson Atlanta International Airport.

The **\$103.7 million** in investment identified for the other scheduled air cargo airports in Georgia is the level of funding needed to enable these airports to maximize their potential.

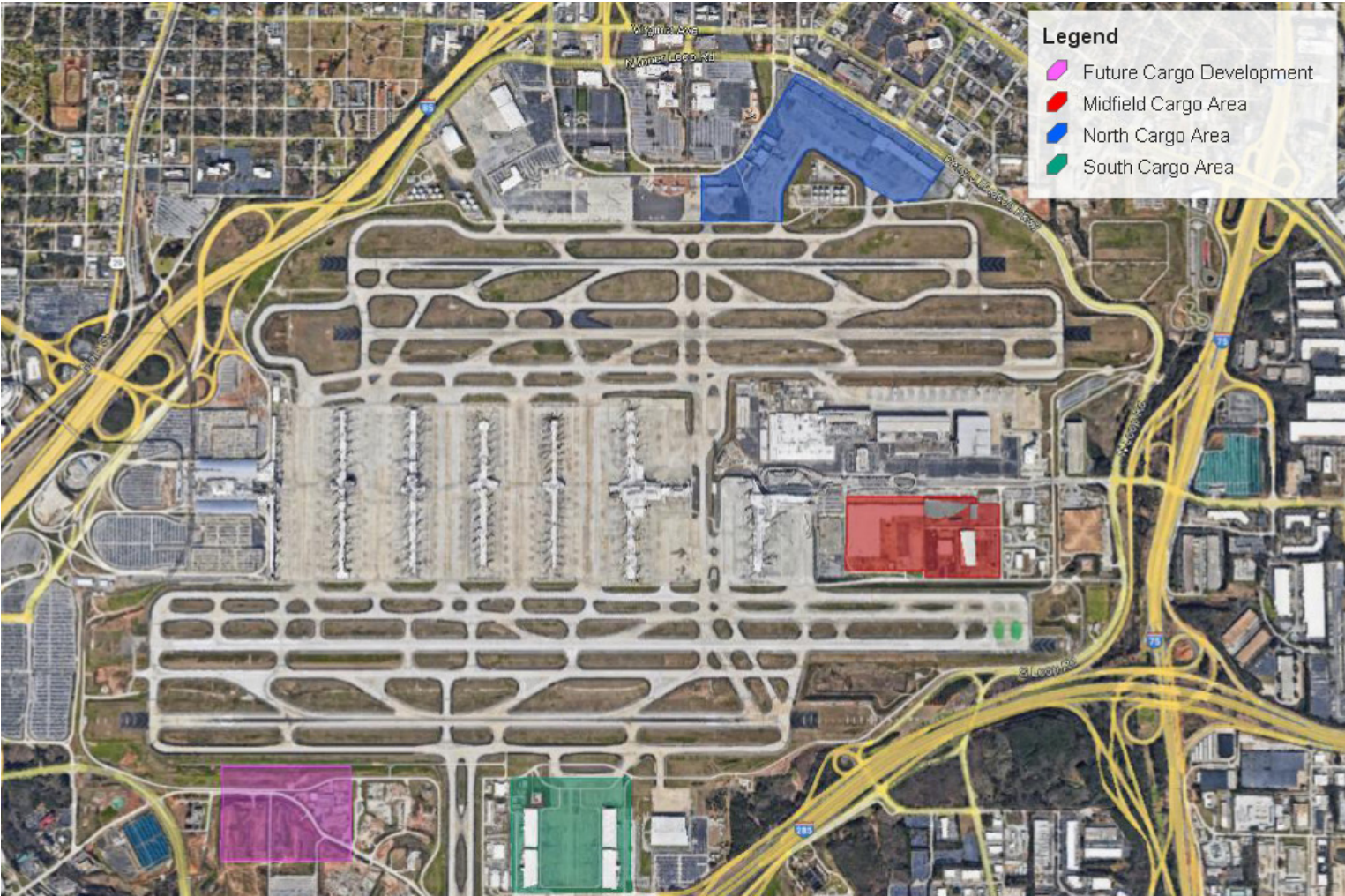
AIR CARGO CARRIERS TRANSPORTING CARGO TO AND FROM ATL

- | | | | | |
|-------------------------|------------------------|------------------------|--------------------|-----------------|
| • Airbridge Cargo | • Aerologic | • Challenge Airlines | • EVA Air Cargo | • Qatar Cargo |
| • Asiana Cargo | • Amazon Air | • Cargolux | • FedEx Express | • Turkish Cargo |
| • Air Belgium | • China Airlines Cargo | • Cathay Pacific Cargo | • Korean Air Cargo | • UPS |
| • Air Atlanta Icelandic | | • DHL | • Lufthansa Cargo | |

ATL currently has approximately two million square feet of building space dedicated to processing air cargo. There are three separate areas at the airport dedicated to supporting air cargo operations. These areas support storage/sorting facilities, offices, truck parking and docking facilities, and other support facilities. A fourth area to accommodate growing air cargo demand has been planned for development. The airport has advertised and is in the process of selecting a private developer for the fourth air cargo area. When that development is complete, ATL will have additional state-of-the-art facilities to meet future air cargo demand.

CURRENT AND PLANNED AREAS SUPPORTING AIR CARGO OPERATIONS AT ATL

Existing air cargo areas cover almost 150 acres. Building space in the three existing cargo areas is currently at or near capacity. The future air cargo development area covers about 40 acres, and the facilities layout for this area will be similar to the existing South Cargo Area. ATL identified other opportunities for addressing land-side constraints, congestion related to maneuvering, truck staging, and roadway interchange/traffic pattern improvements. Potential improvements include reconfiguration of Perry J. Hudson Parkway, reconfigurations of the interchanges at Interstate 285 and Riverdale Road and Interstate 85 and Riverdale Road, and expanded MARTA service for cargo employees. Follow-on study is needed to identify alternatives to address these constraints; actual projects and anticipated costs would be developed at that time.



In November 2019, ATL implemented its Cargo Community System. This digital technology tracks air cargo activity within the ATL complex; ATL was the first airport in North America to implement this technology. Through physical expansion and the use of cutting-edge technology, ATL continues to be a leader in air cargo.



FINDINGS

The Statewide Air Cargo Study provides a higher-level blueprint for improvements at airports with existing scheduled air cargo service that may be needed to support projected demand and to address current operating constraints. An estimated total of **\$103.7 million** is needed for the identified improvements. This investment does not include additional funds that will be required to improve air cargo facilities at ATL.

SUMMARY OF AIRPORT IMPROVEMENT NEEDS

ASSOCIATED CITY	AIRPORT NAME	RECOMMENDED IMPROVEMENT	ESTIMATED COST
Albany	Southwest Georgia Regional	50,000 square feet (SF) apron for aircraft parking	\$3,145,000
		Replace ASOS	\$300,000
		350,000 SF of additional apron for aircraft parking; master plan to determine phasing.	\$10,050,000
		New cargo building to coincide with longer term apron expansion	\$10,000,000
		Parking lot expansion of 20,000 SF to coincide with longer term apron expansion	\$265,000
		1,500' runway extension; final length and preferred alternative for expansion to be determined in master plan	\$6,500,000
Subtotal for Southwest Georgia Regional Airport (ABY)			\$30,260,000
Savannah	Savannah/Hilton Head International Airport	Construct air cargo apron 176,000 SF; project underway	\$7,800,000
		Construct air cargo building 220,000 SF	\$50,000,000
		Extend stub taxiway (Taxiway G); build bridge over Gulfstream Road for two-way taxiing to new air cargo area	\$13,000,000
Subtotal for Savannah/Hilton Head International Airport (SAV)			\$70,800,000
Statesboro	Statesboro-Bulloch County Airport	Apron rehabilitation (mill and overlay)	\$1,300,000
Swainsboro	East Georgia Regional Airport	Apron rehabilitation (mill and overlay)	\$1,300,000
Sum of Estimated Costs for Identified Airport Projects			\$103,660,000

POTENTIAL ECONOMIC IMPACTS

Improving the existing air cargo airports would have a number of potential economic benefits.

Project Implementation: Considering economic impacts associated with only identified investment needs, **1,406 jobs** would be supported, and these jobs would have a cumulative salary of **\$53.7 million**. An estimated **\$148.9 million** in materials would be purchased to implement the projects, and **\$202.6 million** in total annual economic activity would be realized from direct, indirect, and induced impacts.

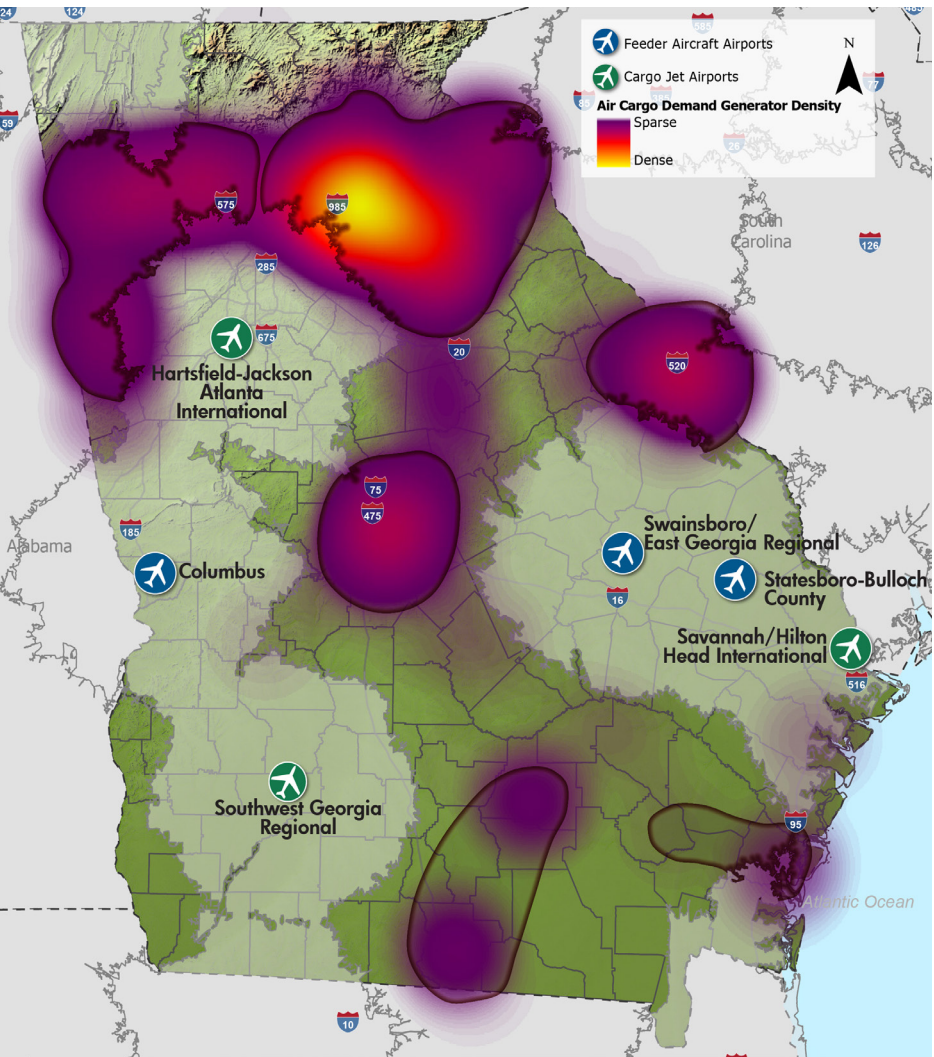
On and Off-Airport Benefits: Investment would enable airports to accommodate expanded air cargo operations, both in terms of the size of the aircraft they accommodate and the frequency at which they operate. These increases would support additional air cargo related jobs both on and off-airports in Georgia. Identified improvements would support Georgia’s continued position as one of the top ranked states in the U.S. for doing business.

Airport Revenue Streams: Increased air cargo activity would support higher airport revenue streams in the form of increased fuel sales, additional landing or other use fees, and FAA entitlement funding for enplaned air cargo.

CONCLUSIONS

STUDY ANALYSIS SHOWED THAT WITHIN AND NEAR IDENTIFIED GAP AREAS, THERE ARE EXISTING AIRPORTS WHICH PROVIDE OPPORTUNITIES FOR AIR CARGO EXPANSION.

AREAS WITH POTENTIAL TO ATTRACT AIR CARGO EXPANSION



The statewide study identified 878 air cargo demand generator locations throughout Georgia. Study analysis showed that 86 percent of all demand generators are now within a 60-minute drive-time of an airport with scheduled air cargo service provided by an integrated express carrier. Six airports in Georgia currently have scheduled air cargo service provided by an integrated express carrier. Changing technology, growing demand, and the need to provide customers with reasonable pick-up and drop-off times all indicate that air cargo carriers may expand their operations in Georgia.

Cargo carriers operating jet aircraft require longer runways and dedicated landside facilities to accommodate their operations. Existing and future feeder aircraft operated by scheduled carriers have more minimal facility needs and can operate on runways in the 5,000-foot range. FedEx Express, DHL, and UPS are all expanding their operating fleets to include additional feeder aircraft; many of the new feeder aircraft are powered by electricity.

Considering the location of study-identified air cargo demand generators and existing infrastructure, airports were reviewed in the statewide study to assess their relative propensity for accommodating scheduled air cargo expansion. Ultimately, the carriers themselves will determine if they need to expand their operations to other airports, and the carriers will determine where that expansion is most beneficial to their operations. Within that context, Georgia airports have existing infrastructure that is available to support growth in air cargo demand.

The air cargo industry is changing and growing. Rapid of expansion of e-commerce is expected to continue. While study findings provide a snapshot of Georgia’s current and near-term air cargo environment, it is important to observe and track change in the air cargo industry. The study recommends the formulation of an Air Cargo Working Group; this group will:

MONITOR	KEEP	TRACK	HELP	ADVOCATE
Monitor how economic growth influences air cargo demand	Keep tabs on the implementation of this study’s identified air cargo facility improvements	Track changes in technology that influence air cargo demand	Help the state stay abreast of air cargo expansion opportunities	Advocate for funding for air cargo projects from the state legislature

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